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| 09/746,618      | 12/21/2000  | Kenneth R. Wilsher   | M-8666 US           | 2164             |

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EXAMINER

ROSENBERGER, RICHARD A

ART UNIT PAPER NUMBER

2877

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/746,618

Applicant(s)

WILSHER ET AL.

Examiner

Richard A Rosenberger

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 11 and 12 is/are allowed.
- 6) ☐ Claim(s) 1-10 and 13-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rao (US 5,812,708) and Paniccia (US 6,052,498).

Rao teaches directing light to photosensitive targets on an integrated circuit with a fiber and a lens (column 6, lines 30-38)

As discussed above, optics element 507 splits, collimates and focuses laser beams 509A-J into P-N junctions 515A-J using well known techniques. In one embodiment, optics element 507 includes a fiber optic system is employed to split the laser power and distribute and focus it into P-N junctions 515A-J. This embodiment includes individual micro-lenses at the ends of the fiber optic elements and any required matching of the silicon/air refractive index to maximize the light coupling into the silicon.

The optical pulses of Rao are disclosed as being clock pulses, and places the arrangement in the context of circuits with "clocks for the latching of data" (column 1, lines 16-17). Thus, fairly read, the reference thus at least clearly suggests using the clock pulses of the reference to latch data.

Rao does not discuss how the optical fibers and lenses are held in place; it is clear, however, that there must be some sort of "fixture" so holding them, they do not float in air unsupported.

Rao mentions (column 6, lines 23-29) that there may be a heat sink included in the arrangement:

In another embodiment of the present invention, optical element 507 is disposed between the silicon of substrate 513 and a heat sink (not shown). In that embodiment, optical element 507 is sandwiched between the silicon and the heat sink using well known techniques such that heat is sufficiently dissipated from the integrated circuit die.

It is known in the art that a heat sink may be combined with the "fixture" holding optical elements. This is shown by Paniccia (for example, the abstract, lines 6-9):

An optical assembly used to generate and direct the light beams of the optical bus may be included within a heat sink thermally coupled to the back side silicon substrate of the integrated circuit die.

It would have been obvious to combine the heat sink mentioned by Rao and the fibers and lenses also taught by Rao in the manner taught by Paniccia because this is a known manner of providing both elements taught by Rao in a convenient manner.

Both Rao (abstract, line 3) and Paniccia (column 7, lines 24) mention that the light source may be a laser.

Rao states that the optics can be implemented using "well known techniques" (column 6, line 32), and mentions computer-generated holograms (column 6, line 39) and lenses (column 6, line 36). The use of other known techniques or arrangements for focusing the light as desired, particularly given the teaching of Rao of using "well known techniques", would have been obvious.

It is known in the art that stray light is undesirable. It would have been obvious to provide means, such as blackening surfaces in the fixture, to capture unwanted stray light to reduce the art-recognized deleterious effects of such stray light, such as light reflected by the detector being illuminated.

3. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over as applied to the claims above, and further in view of Waters et al (US 4,627,731) and Lackie (US 5,152,962).

It is known to focus light from a fiber onto a surface by means of a pair of lenses, the first of which collimates the light and the second of which focuses it; see Waters et al, figure 1, with the fiber with end 48 and two lenses 56 and 58. Using this known arrangement to focus light in a system such as taught by Rao would have been obvious because it is a known manner of focusing and directing light. Lackie shows that it is known in the art to use a tube to support an optical fiber for receiving light from a light source and/or transmitting light to a detector; see supporting tube 38. Using such a tube to support the fibers in an arrangement such as in Rao would have been obvious because it is a known manner to accomplish what is necessary, holding the fibers in place. The use of the tube does not in any way depend upon the details of the lens being used or other optical details of the arrangement shown by Lackie; the fiber will be supported equally as well should the light source be located at the other end of the fiber.

Art Unit: 2877

4. Because of the rewriting of these claims in independent from by the amendment filed 8 October 2003, claims 11 and 12 are allowable for the reasons set forth in the previous office action.

5. The remarks filed 8 October 2003 argue that Rao does not involve testing of the semiconductor. In the claims there are references such as to an "optical test system for testing a device under test", and other references to a "device under test". However, there no claimed structure to make the device a "test"; for example, there is no means for evaluating the results. The actual structure claimed is taught and suggested by the applied reference; absent any structure specific to a test the "test" language in the claims is at best a non-limiting statement of intended use that cannot be used to distinguish over the art.

6. Papers related to this application may be submitted to Group 2800 by facsimile transmission. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The fax number is (703) 872-9306

Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. A. Rosenberger whose telephone number is (703) 308-4804.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

R. A. Rosenberger  
18 December 2003



Richard A. Rosenberger  
Primary Examiner